LA-UR-19-23163

Title: LANL Mission Assurance Overview

Author(s): Littleton, Seth Corey

Intended for: Triad Board of Governors Presentation
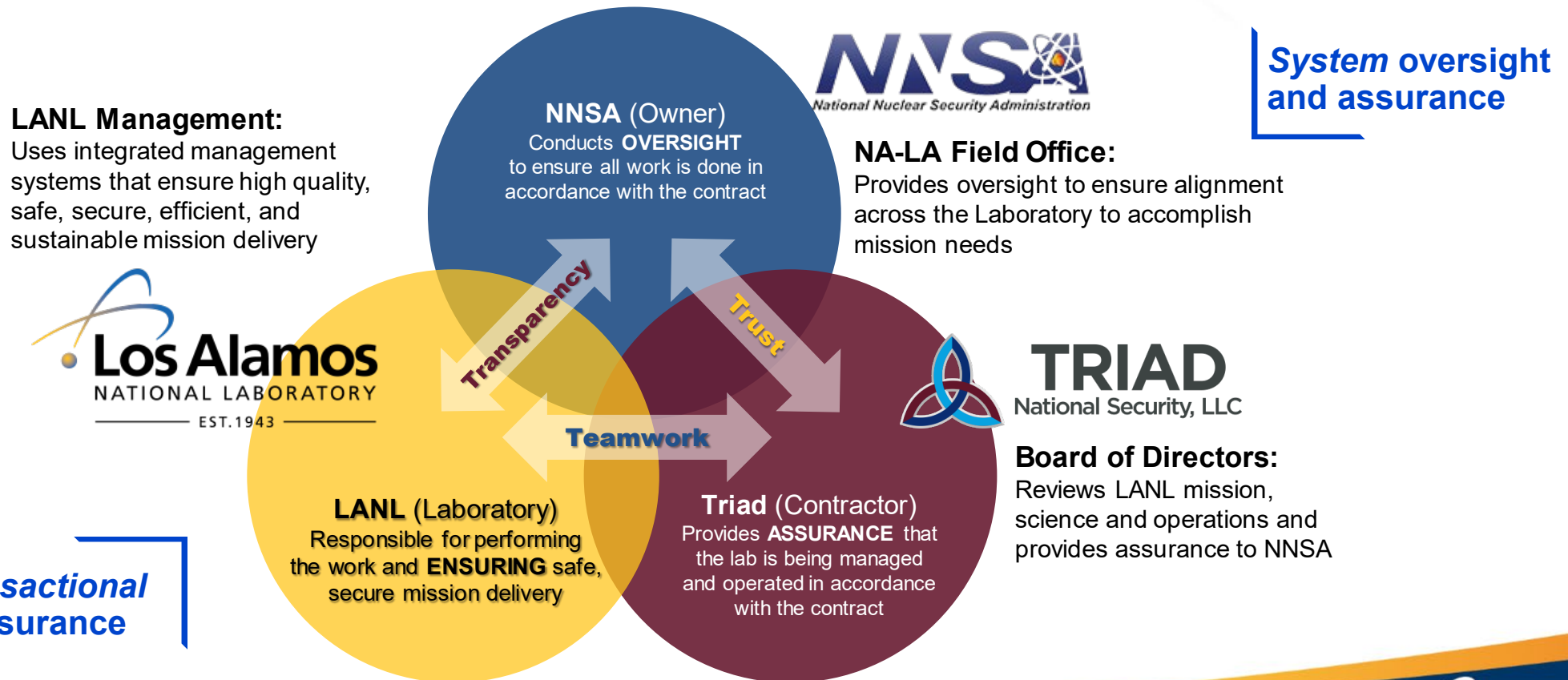
Issued: 2019-04-08

LANL Mission Assurance Overview

Marc Clay: Director Mission Assurance and Prime Contract

The Framework for Mission Assurance

The Laboratory, the Triad Board, and NNSA have an integrated assurance framework built on trust, transparency & teamwork that *enables the mission* and provides *defense in depth*

LANL Management:
Uses integrated management systems that ensure high quality, safe, secure, efficient, and sustainable mission delivery

NNSA (Owner)
Conducts **OVERSIGHT** to ensure all work is done in accordance with the contract

System oversight and assurance

NA-LA Field Office:
Provides oversight to ensure alignment across the Laboratory to accomplish mission needs

LANL (Laboratory)
Responsible for performing the work and **ENSURING** safe, secure mission delivery

Triad (Contractor)
Provides **ASSURANCE** that the lab is being managed and operated in accordance with the contract

Board of Directors:
Reviews LANL mission, science and operations and provides assurance to NNSA

Transparency

Trust

Teamwork

System and *Transactional* oversight and assurance

The Foundation for Mission Assurance

The Lab Agenda: Ensuring simultaneous excellence

Design, produce, and certify current and future nuclear weapons and reduce global nuclear threats

Excellence in Nuclear Security

Excellence in Mission-Focused Science, Technology, and Engineering

Deliver scientific discovery and technical breakthroughs that support DOE and NNSA missions

Execute sustained operations that are reliable and responsive to mission needs

Excellence in Mission Operations

Excellence in Community Relations

Sustain and enhance LANL's partnership with the community across Northern New Mexico

The Model for Mission Assurance

NNSA
- System level, performance based oversight

Triad Board of Directors
- Governance
- Risk-based assurance
- Engaged subcommittees

- Contract management
- Lab agenda, Performance Evaluation Management Plan, clearly defined expectations

Leadership Team
- Develop and execute Lab Agenda
- Identify/mitigate risks, gaps, and weaknesses
- Quarterly senior management review of CAS
- Institutional adjustments to CAS based on needs
- Personal performance expectations

Managers
- Monthly CAS reviews (issues and actions)
- Hold staff accountable to follow Lab Agenda and CAS requirements
- Personal performance expectations

Workforce
- Empowered to identify, track and trend issues and risks; report issues upward and be involved in process improvements
- Active management engagement and performance tracking
- CAS system with analysis, trend, and tracking tools to support workforce

Additional assurance activities
- Continuous commissioning
- Communities of Practice
- Peer reviews
- Ongoing training (LOLA/LOSA/SAFE)

Monitoring performance: Internal Audit and Independent Oversight

Joint vision, shared expectations and reinforced accountability → Ensuring transparence and accountability to Triad Board and NNSA
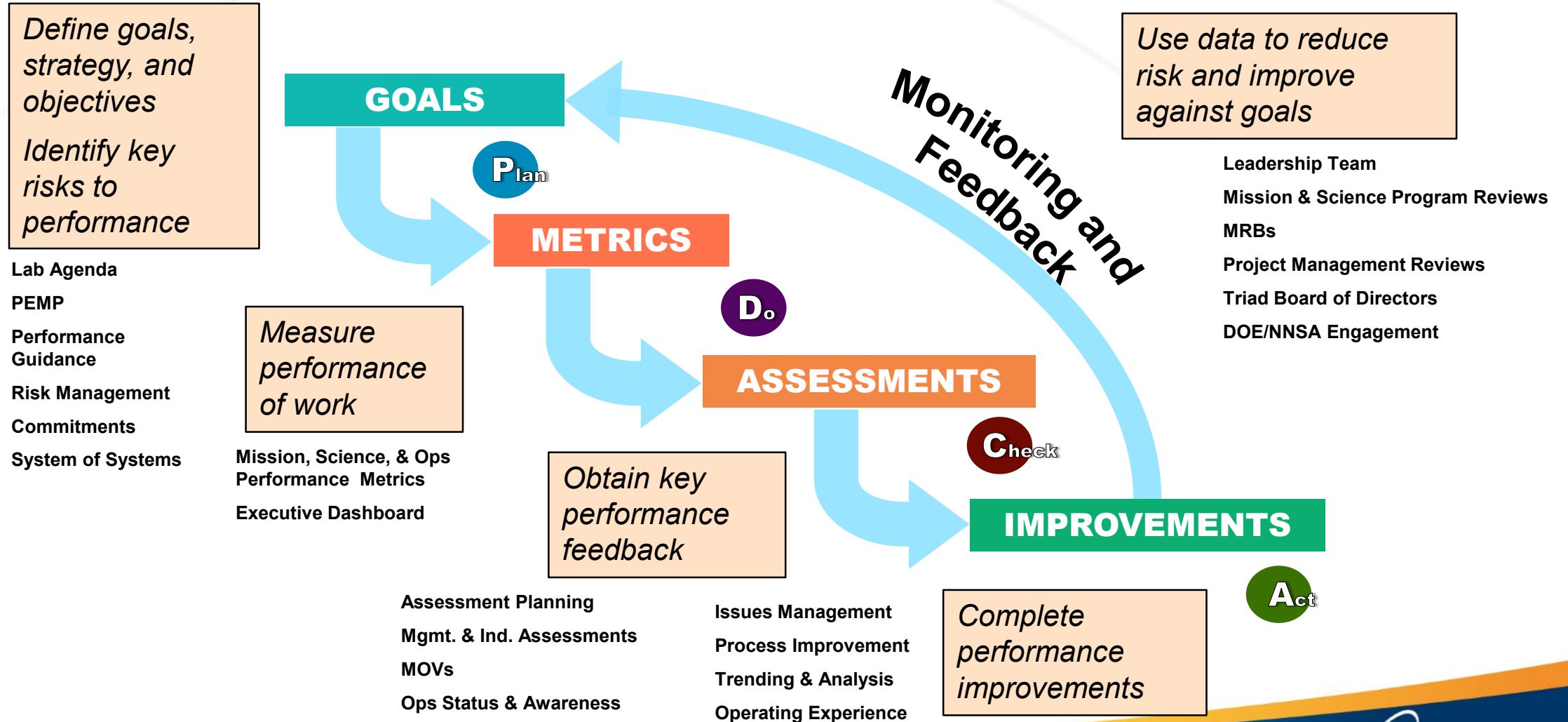
The Balance for Mission Assurance

Enterprise Risk Management

- Enables risk-based decisions and controls
- Anticipates and mitigates mission and operational issues
- Elevates attention on risks and issues
- Communicates risk management strategy to Laboratory, Triad, and NNSA

The Cycle of Mission Assurance

Define goals, strategy, and objectives

Identify key risks to performance

Lab Agenda

PEMP

Performance Guidance

Risk Management

Commitments

System of Systems

GOALS

Plan

METRICS

Do

Measure performance of work

Mission, Science, & Ops Performance Metrics

Executive Dashboard

ASSESSMENTS

Check

Obtain key performance feedback

Assessment Planning

Mgmt. & Ind. Assessments

MOVs

Ops Status & Awareness

Issues Management

Process Improvement

Trending & Analysis

Operating Experience

IMPROVEMENTS

Act

Complete performance improvements

Monitoring and Feedback

Use data to reduce risk and improve against goals

Leadership Team

Mission & Science Program Reviews

MRBs

Project Management Reviews

Triad Board of Directors

DOE/NNSA Engagement

Integrated Management Systems – The "*system of systems*"

Integrate: Leadership Input, Other System inputs

Systematically ensures necessary requirements are integrated into LANL's work

Input
- Prime Contract
- Federal Requirements
- Performance Direction

Acq. Services & Property Management	Engineering Services	Legal/Ethics	Radiological Protection	Waste Management
Logistics, Transportation, Shipping & Pack.	Environmental Management & Stewardship	Nuclear Safety Management	Records Management & Document Control	Weapons
Communications, Community Relations	Facilities & Operations Management	Project Management & Execution	Safety & Health	
Cyber Security	Financial Management & Services	EVMS	Science, Technology, & Engineering	
Defense Security	Human Resources Development & Services	Inst. Quality & Performance Assurance	Site Infrastructure Planning	
Emergency Management	Information Technology	Mission Assurance & Contract Management	Training	

Enable Simultaneous Excellence and Culture Change
- Clear R2A2s
- Necessary and Useful Policies & Procedures
- Efficient Processes & Tools
- Risk-Based Decisions and Controls
- Focused Performance Monitoring

External Deliverables: Annual Reports, Assessment Data

Mission Assurance Tactical Focus

Improve our ability to critically evaluate and act upon *Leading Indicators*

- Enable trust to permeate the organization

- Cultivate a questioning attitude

- Increase sensitivity to potential gaps, convergence of weak-points, issues, stressors, or uncertainty

- Be self-aware of potential problem areas:
  - New science or operational area?
  - Infrequent activities or evolutions?
  - Necessary resources, expertise, & oversight?

Employees
Training
Distraction
Fatigue
Stress

Technical
Design
Maintenance
Compatibility

Resources
Funding
Staffing

Team
Responsibilities
Handoff
Integration Points

Organization
Culture
Policies
Priorities
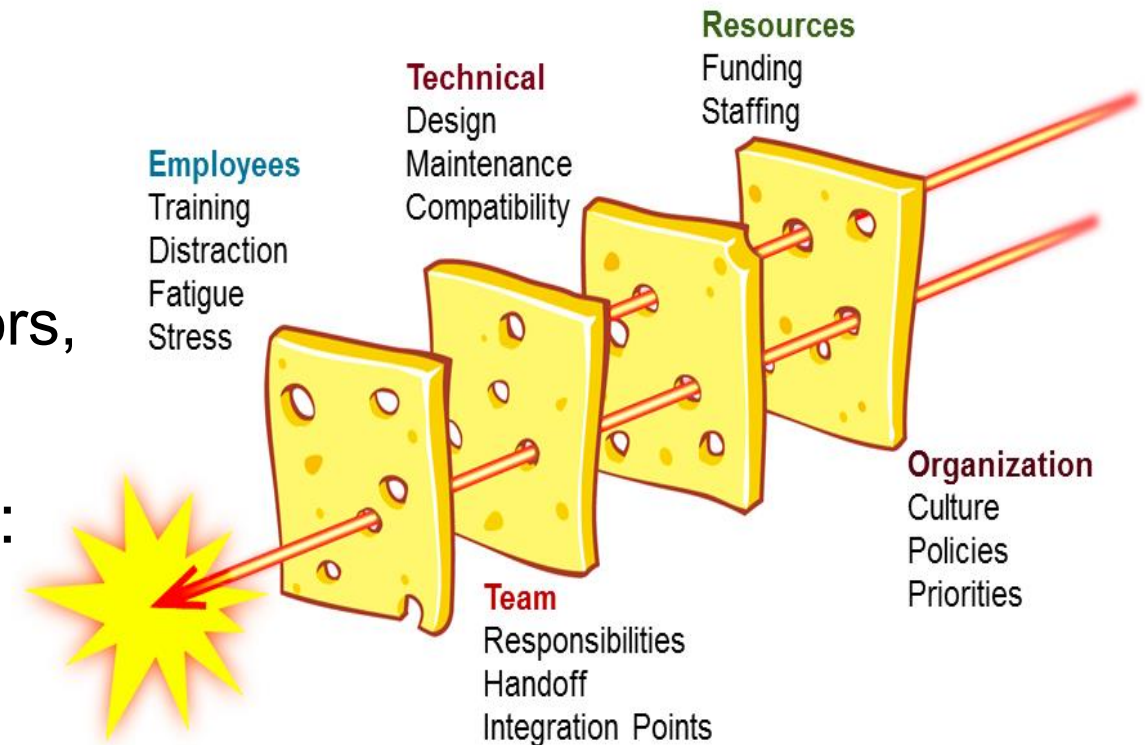
Mission Assurance Tactical Focus *(cont.)*

Improve line management oversight of mission and operations performance and the effectiveness of assurance processes

- Monitor performance against Lab Agenda
- Review risks and adjust mitigations as necessary
- Monitor effective resolution of issues
- Evaluate and continually improve performance metrics
- Consider effectiveness of assessments, MOVs, and operational awareness activities
- Elevate risks and issues as breadth and/or impact increases

Management Review Boards

Keep the End in Mind: What does success look like?

- **Trust, transparency and teamwork – LANL, Triad, and NNSA**
  - Joint focus on enabling mission, science and operational excellence
- **Clear links to Laboratory Goals and Agenda**
  - Know how work processes contribute to mission achievement and operational excellence
- **Readily accessible and useful data to:**
  - Set clear, concise expectations
  - Make decisions
  - Anticipate risks & issues and avoid surprises
- **Fewer significant adverse events**
  - Effective and sustainable corrective actions
- **More time, resources, and investment for**
  - Programs, planning, and aligning
  - Motivating and mentoring
  - Executing and improving

> Reliable, safe & secure mission delivery and high quality products and services

LANL Contractor Assurance Overview

Seth Littleton: Division Leader Institutional Quality and Performance Assurance

CAS Current State

- Contractor Assurance System (CAS) was known challenges going into bid

- Transition identified gaps in implementation of Issues Management (IM)

- Transition occurred November 1, 2018

- Hired Mission Assurance Director November 26, 2018 to provide focused leadership and rebuild program

- Blue sheeted policies with changes to address governance, pending program realignment with expectations

- Self-critical Annual CAS Letter issued December 5, 2018

  - Identified significant room for improvement, expectations of leaders, commitment to partnering

- EA-30 arrives on site December 3, 2018 (Final report pending)

  - EA record review covered Jan 1, 2016 to Sep 1, 2018

- OIG visit scheduled April 17, 2019 to review response to 2016 report, including IM issues

Timeline of Key CAS Milestones at LANL
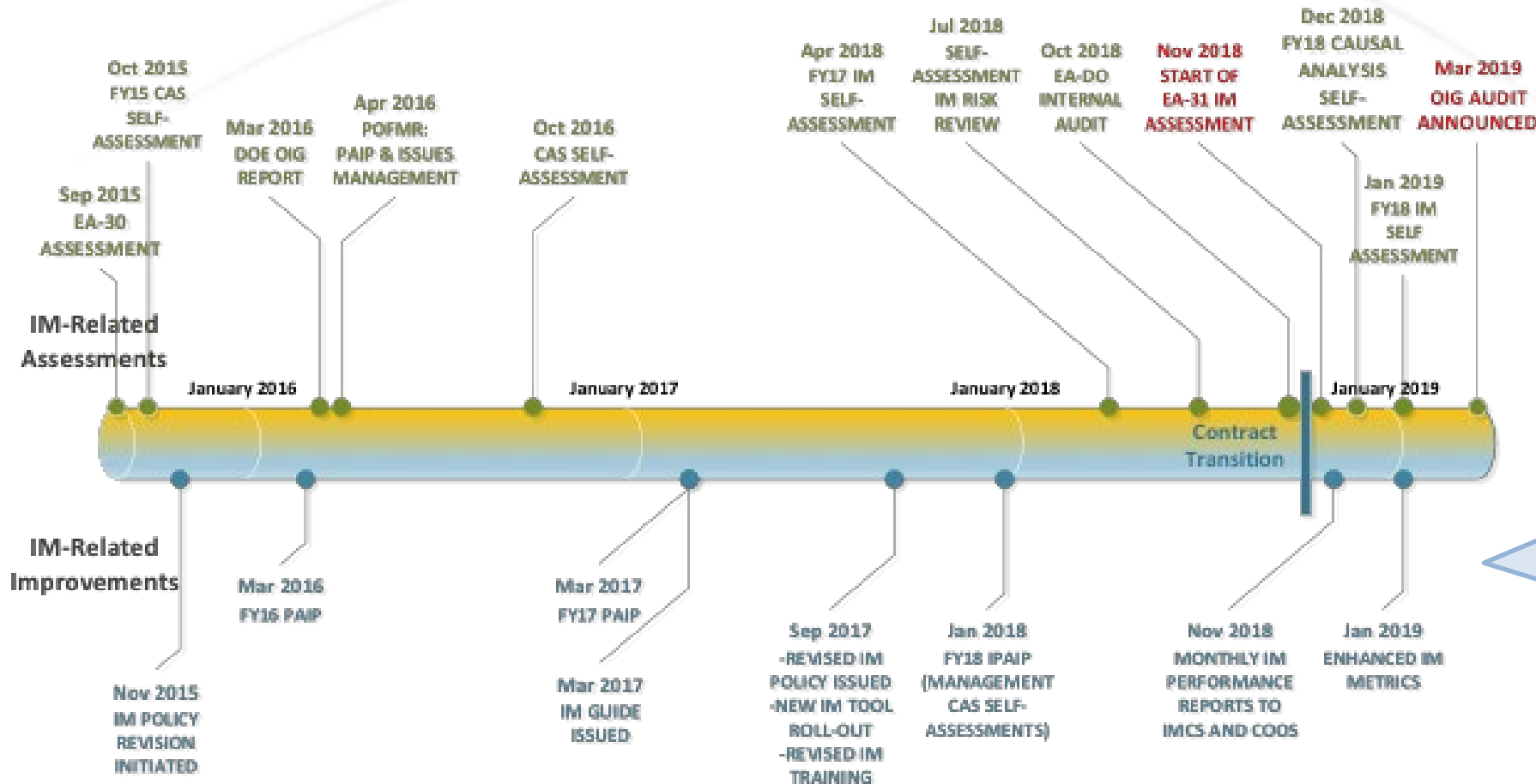
- Significant progress in CAS program since 2016
- Focus on rebuilding the CAS foundation
- Shifting focus to line implementation and application

Challenges persist across institution in the adoption and implementation of CAS principles

EA Issues Management Assessment – Preliminary Results

EA Assessment of the management of nuclear safety and implementation of IM resulting in four findings.

F-Triad-1: IQPA did not meet responsibilities for managing IM program and verifying appropriate quality assurance program has been established.

F-Triad-2: Issue Responsible Managers (IRMs) for nuclear safety issues are not adequately implementing the graded approach required to ensure proper rigor is being applied to analyzing issues.

F-Triad-3: Senior Triad management is not adequately ensuring its personnel are effectively implementing the IM process and a graded approach.

F-Triad-4: IRMs for nuclear safety issues are not ensuring that corrective actions are adequately completed and documented to ensure that issues are resolved.

EA schedule: IM tool overview on Nov.5, on-site Dec. 3-6, and Jan. 15-17. Final report pending.

Concluded longstanding weaknesses in IM process and institutional behaviors allowed problems to go uncorrected

Current Open Issues by ALD and Risk

1,333 Open Issues as of 03-31-19 Identified by Risk and ALD
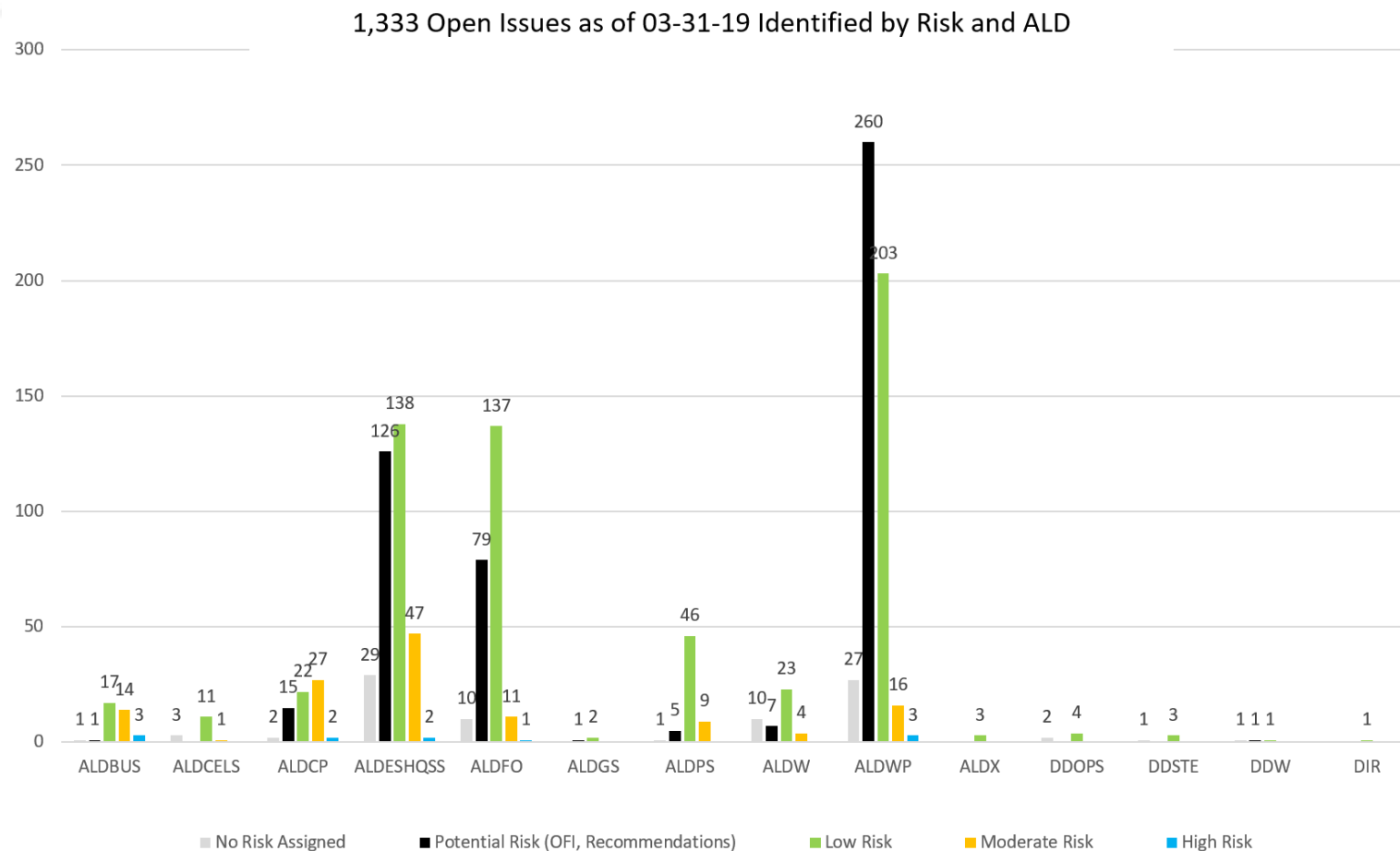
Total of 10 high-risk issues currently open across the institution

The Cycle of Mission Assurance

Define goals, strategy, and objectives

Identify key risks to performance

Lab Agenda

PEMP

Performance Guidance

Risk Management

Commitments

System of Systems

Measure performance of work

Mission, Science, & Ops Performance Metrics

Executive Dashboard

Obtain key performance feedback

Assessment Planning

Mgmt. & Ind. Assessments

MOVs

Ops Status & Awareness

Use data to reduce risk and improve against goals

Leadership Team

Mission & Science Program Reviews

MRBs

Project Management Reviews

Triad Board of Directors

DOE/NNSA Engagement

Complete performance improvements

Issues Management

Process Improvement

Trending & Analysis

Operating Experience

GOALS

METRICS

ASSESSMENTS

IMPROVEMENTS

Plan

Do

Check

Act

Monitoring and Feedback

Performance Evaluation and Measurement Plan

FY19 Performance Evaluation and Measurement Plan (PEMP)

- Approved 11/01/2019

- Revised 01/31/2019

- Key Outcomes (KO) added to Goal 6

- **KO 6.1** – Strong leadership for pit production at LANL and SRS

- **KO 6.2** – Support Nuclear Security Enterprise

- **KO 6.3** – Enterprise solutions (previously Goal 5)

- Including topical areas in trending and analysis efforts

- Commended for being self-critical and transparent

Must continue focusing on reoccurring challenges

GOAL #	GOAL	KEY OUTCOMES	FEE AMOUNT	FEE TYPE
1	Mission Execution: Nuclear Weapons	4	$8.02M	At-Risk Award Fee
2	Mission Execution: Global Nuclear Security	2	$3.44M	At-Risk Award Fee
3	DOE and Strategic Partnership Project Mission Objectives	0	DOE: $4.3M SPP: 1.65M	DOE: Fixed Fee and At-Risk Fee SPP: Fixed Fee
4	Mission Execution: Science, Technology, and Engineering (ST&E)	0	$18.0M	Fixed Fee
5	Mission Enablement	7	$6.9M	At-Risk Award Fee
6	Mission Leadership	3	$4.6M	At-Risk Award Fee

Topical areas scrutinized in FY18 PEMP Report (Majority map to FY19 Goal 5)

- Waste Management
- Environmental Permitting
- Enterprise Communication
- Application of CAS
- Safety Culture
- Maintenance and Construction CONOPS
- Cyber Security
- RCRA Compliance
- Critical Skills

- Construction Maintenance/Backlogs
- Increase in significant events
- Ineffective Transfer to N3B
- Nuclear and Criticality Safety
- HE Event
- Line Item Projects
- NMC&A
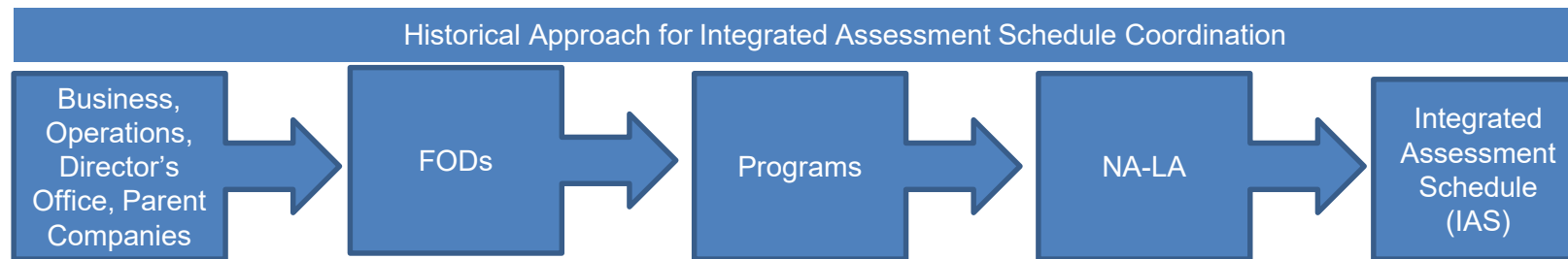- CAT A Security Events

Metrics and Executive Dashboard
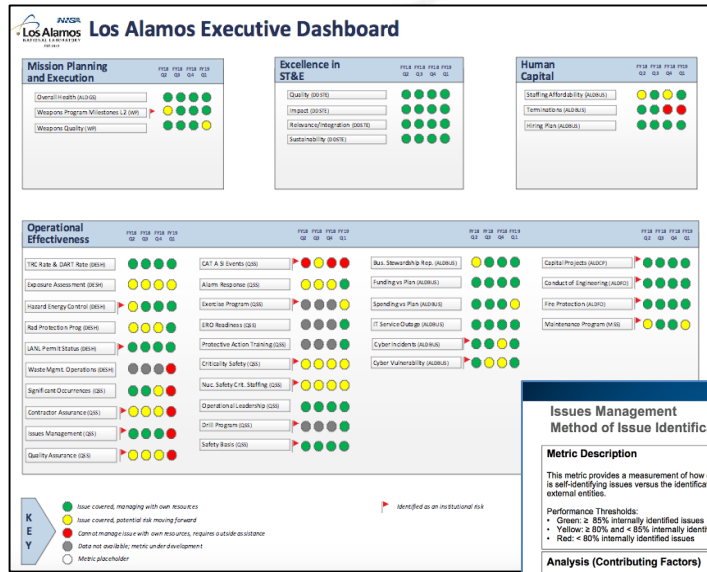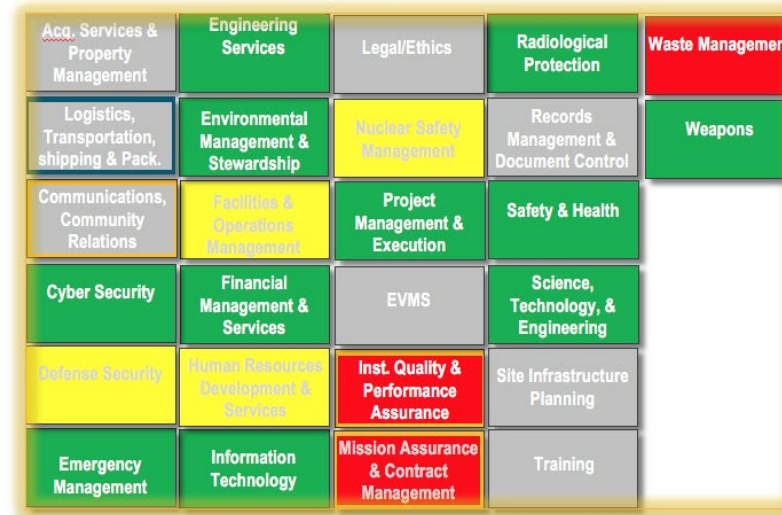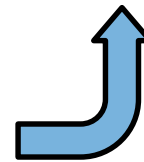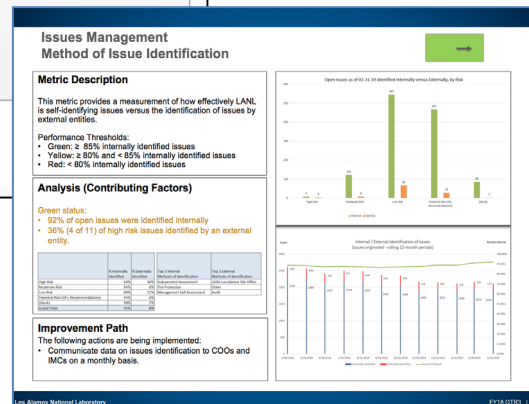
- Dashboard mapped to 26 system of systems
- Currently roll-up of 72 individual metrics
- Areas with gaps from current dashboard in gray
- Additional metrics exist at local levels for consideration
- New metrics will be developed to fill remaining gaps

Identifying existing, or developing new metrics on compliance and performance where lacking

Assessment Planning

- Risk-based assessment planning tool, working to strengthen link to risks and risk descriptions

- Continue to stress schedule thoroughness and adherence

  - NA-LA partners face challenges conducting shadow activities

    - Approximately NA-LA 153 shadow activities scheduled for FY2019

  - Undisciplined change control creates potential gaps

- Instances where assessments are entered in IAS after completion, degrading planning effectiveness

Historical Approach for Integrated Assessment Schedule Coordination

Business, Operations, Director's Office, Parent Companies → FODs → Programs → NA-LA → Integrated Assessment Schedule (IAS)

Requires more disciplined implementation and stronger link to risk management to maximize effectiveness

Assessments – Operational Status and Awareness

- Total of 1,265 "assessments" performed since 2017

- More than 19 types of assessments captured
  (i.e. management, independent, internal/external audits, surveillances, etc.)

- Ratio of 20% external to 80% internal

- Critical Function Evaluations (CFE) and Effectiveness Evaluations (EE) focused on institutional issues

  - FY18 – Electrical Safety, Chemical Waste Management, Supply Chain Quality

  - FY19 – Rad protection/contamination control, Shipping CAP EE, Pressure Safety, Integrated Work Management

Assessments Total (2010 to Present)

	External	Internal	Totals
All (since 2010)	964	5028	5992
Active (2010 to present)	86	331	417
Closed	878	4697	5575
FY 2019 All	62	308	373
2019 Active	52	257	312
2019 Closed	10	51	61
FY 2018 All	42	345	387
2018 Active	7	41	48
2018 Closed	35	304	339
FY 2017 All	67	438	505
2017 Active	17	4	21
2017 Closed	50	434	484

Improving assessment module in IM tool to support data analysis for future assessment planning

Management Observation and Verification

Management Observation and Verification (MOV)

- Director added additional levels of MOVs following shipping event that occurred June 2018

- Field Interactions, General, and Monitored Evolutions

- Further simplification for ease of input

- Mobil app developed for field use

- Hard copy forms for manual recording and entry
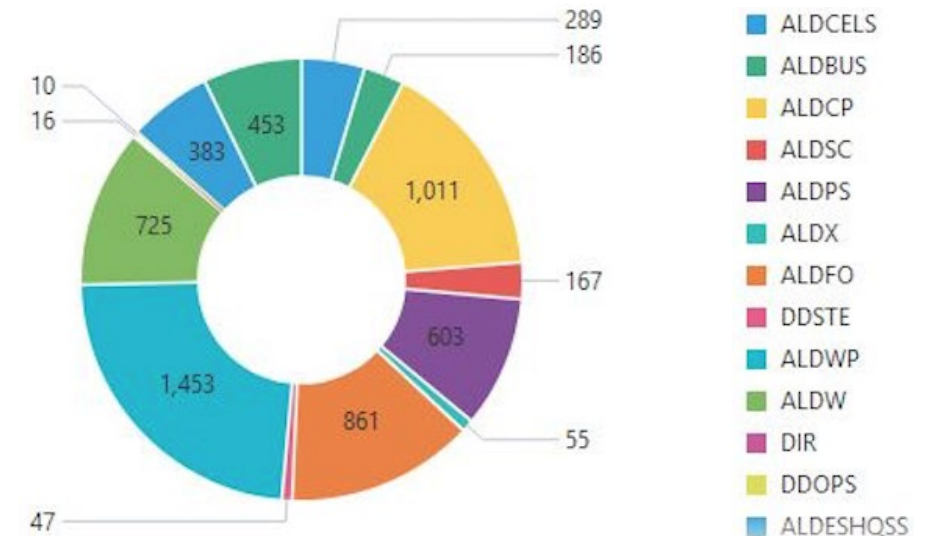
MOV Focus Areas (Data covering last 12 months)

- 6,260 total MOVs across 14 organizations

- 32 individual focus areas

- Highest number = 939, Supervisor Presence in Field

- Lowest number = 4, Export Control

Evaluating trends to look for potential gaps in critical areas

Issues Management

Continued Focus in Core Areas

- Institutional Management Review Board (IMRB) reconstituted to review matters of institutional significance with potential impact to mission (Reviewed ALDWP CAP- Pu Uptake)

- Approximately 10 ALD and 20 Division Management Review Boards (MRBs) managing lower-level issues

- Working to address EA-31 feedback on IM implementation

    - ALDWP and ALDESHQSS restructuring MRBs

    - Causal Analyst from INL supporting response to issues identified

- Consolidating approximately 7 systems currently tracking issues

Focus on improving level of rigor to address potential for missed opportunities to learn from issues

Trending and Analysis

LANL MIRROR - *Translating events into actionable information*

- Quarterly summary of all reportable occurrences at LANL

- 16 years of publishing the Mirror (64 issues)

- 1,000+ LANL managers receive a hardcopy quarter

- 8 recipients at DOE Headquarters

- 60 copies sent to NA-LA quarterly

- 20 DOE Sites across the Complex receive distribution

- Published on OPEXShare (electronic LL database for DOE)

- Cited as best practice

- Provides transparency to DOE
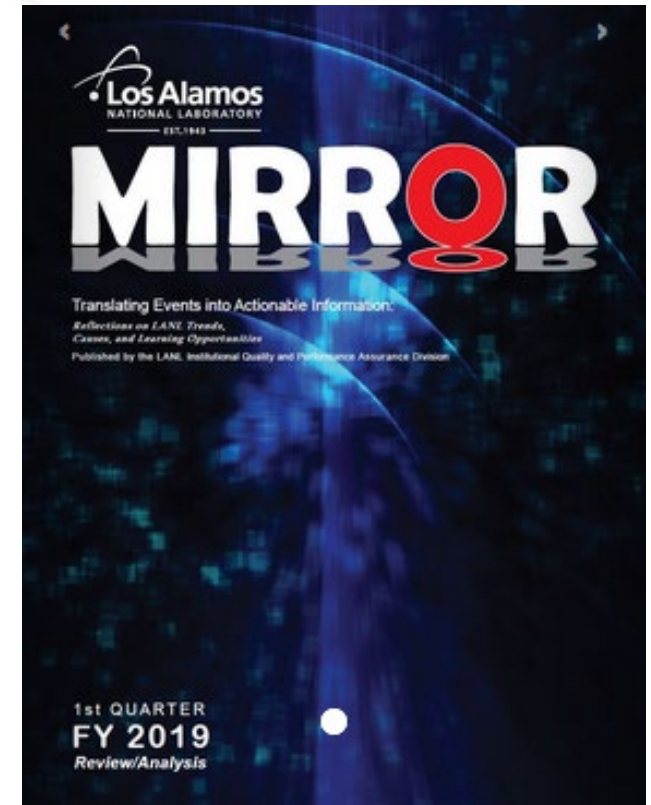
Trending and Analysis

Communication of Trending and Analysis

- Event Data Dashboard / Heat Map
  - Rolling monthly snapshot of ORPS events by FOD
  - Includes ORPS title, group, ORPS vs IMT risk ratings, NTS reportable
- Quarterly CAS Metrics (Exec Dashboard)
- Monthly IM Measures
- Monthly IM Dashboard
- Ad hoc for ALDFO (Targeted assist effort)
- Measure IT (ALDESHQSS Briefing Book)
- Building capabilities up-front (IMT, IAS, MOV, etc.)

Event Data Dashboard
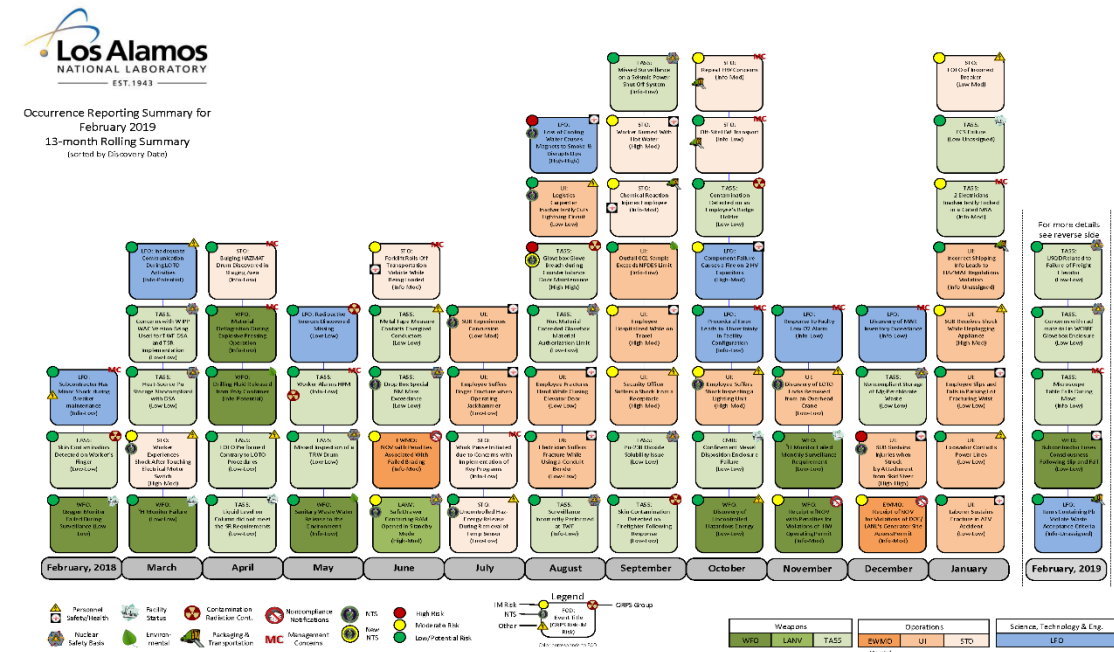
Individual management systems will work together to support integration and automation of trending

Operating Experience

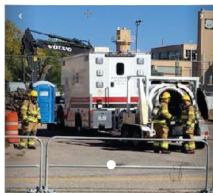PF-LFS Personnel Read Best Practice, Improve Lubrication Technique in Shop

Workers from the Los Alamos National Laboratory (LANL) Logistics Division (LOG-CS) Metal Fabrication Shop found a better, safer, more environmentally friendly way to perform metal cutting, and the rest of the Lab is taking notice.

OPEX in ACTION: Michael Middlemas Acts on Lessons Learned Information to Help Prevent an Incident

Published: 04/12/2018

Doing your homework can really pay off. For Michael Middlemas, it certainly did.

A potential incident involving an expired chemical was averted during a cleanout at LANL in October 2017 thanks to Middlemas and his reading of an OPEXatLANL Lessons Learned from a few months earlier.

OPEX CHAMPIONS

Translating Operating Experience into Action

In this new OPEXatLANL feature, Associate Lab Director Michael Hazen recognizes LANL employees who have taken action to be "OPEX Champions."

"DOING THE RIGHT THING!"

Associate Lab Director
Michael Hazen (ESHQSS)

- Expanding network availability in support of Weapons mission

- Daily visits average 150-300 (1,059 highest)

- Daily views average 800-1,200 per day (2,661 highest)

- Identifying other opportunities for timely communicate (i.e. Safety Alerts)

- FY19 Current Totals: 59 Lessons Learned, 4 Best Practices, 3 OPEX Champions

Demonstrating we are a learning organization and the application of lessons learned

Next Steps

- Re-Inforce the Framework and NNSA Administrator's expectation to *"Get to Yes"*
  - Recent successes: NMC&A Inventory, RANT readiness, Project Crossroads & ECCCE Joint Investigation
  - Governance Partnership Opportunities:
    - National Academy of Sciences /National Academy of Public Administration (NAS/NAPA) (May 14 & 15, 2019)
    - LANL Governance Peer Review (Sept. 23-27, 2019)
  - LANL CAS Description and NNSA/Triad Governance Plan
- Focus on Simultaneous Excellence
- Improve the Enterprise Risk Management Process
- Enhance & Improve the "System of Systems"